

We Claim:

1. A method of controlling the bow and skew of a backing material fed through a tufting machine, the tufting machine having a reciprocating needle bar disposed with respect to a tufting zone through which the backing material is fed, a cloth feed roll positioned upstream of the tufting zone, a roll of backing material from which the backing material is supplied, the backing material having a plurality of elongate warp yarns extending longitudinally in the lengthwise direction of the backing material and a plurality of weft yarns extending substantially perpendicular to the warp yarns in the cross-length direction of the backing material, the method comprising:

aligning at least one elongate weft yarn marker disposed on the backing material, the at least one weft yarn marker being substantially parallel to the weft yarns of the backing material, with the needle bar so that the at least one weft yarn marker is substantially parallel to the needle bar.

2. The method of claim 1, further comprising detecting the at least one weft yarn marker on the backing material as the backing material is being passed toward the tufting zone.

3. The method of claim 2, further comprising detecting a plurality of spaced and substantially parallel weft yarn markers disposed on the backing material and spaced in the lengthwise direction thereof.

4. The method of claim 2, further comprising detecting a plurality of groups of weft yarn markers disposed on the backing material and spaced in the lengthwise direction thereof.

5. The method of claim 1, further comprising detecting whether the at least one weft yarn marker is substantially parallel to the needle bar as the backing material is passed toward the tufting zone.

6. A method of controlling the bow and skew of a backing material fed through a tufting machine, the tufting machine having a reciprocating needle bar disposed with respect to a tufting zone through which the backing material is fed, a cloth feed roll positioned upstream of the tufting zone, a roll of backing material from which the backing material is supplied, the backing material having a plurality of elongate warp yarns extending longitudinally in the lengthwise direction of the backing material and a plurality of weft yarns extending substantially perpendicular to the warp yarns in the cross-length direction of the backing material, the method comprising:

detecting at least one weft yarn marker disposed on the backing material as the backing material is being passed toward the tufting zone, the at least one weft yarn marker being substantially parallel to the weft yarns of the backing material; and

aligning the at least one weft yarn marker with the needle bar so that the at least one weft yarn marker is substantially parallel to the needle bar.

7. The method of claim 6, the step of detecting the at least one weft yarn marker comprising detecting the at least one weft yarn marker with an automated detection device.

8. The method of claim 6, the step of detecting the at least one weft yarn marker comprising manually observing the at least one weft yarn marker.

9. The method of claim 6, further comprising detecting a plurality of spaced and substantially parallel weft yarn markers disposed on the backing material and spaced in the lengthwise direction thereof.

10. The method of claim 6, further comprising detecting a plurality of groups of weft yarn markers disposed on the backing material and spaced in the lengthwise direction thereof.

11. The method of claim 6, further comprising using a bow roll positioned intermediate the cloth feed roll and the roll of backing material, and over which the backing material is at least partially passed, to increase and decrease the tension of at least a portion of the backing material.

12. The method of claim 11, further comprising using the bow roll to increase and decrease the tension of a central portion of the backing material for controlling the alignment of the weft yarns of the backing material with respect to the needle bar.

13. The method of claim 6, further comprising detecting whether the at least one weft yarn marker is substantially parallel to the needle bar as the backing material is passed toward the tufting zone.

14. The method of claim 13, further comprising positioning a bow roll intermediate the cloth feed roll and the roll of backing material, passing the backing material at least partially about the bow roll, and using the bow roll to increase and decrease the tension of at least a portion of the backing material passed thereover in response to the detection of the at least one weft yarn not being substantially parallel to the needle bar.

15. The method of claim 14, further comprising using the bow roll to increase and decrease the tension of a central portion of the backing material passed thereover for controlling any bow that may be present in the weft yarns of the backing material with respect to the needle bar.

16. The method of claim 13, further comprising mounting the roll of backing material on a pair of spaced jack assemblies positioned at the ends of the roll of backing material, and raising or lowering the respective ends of the roll of backing material independently of one another to increase or decrease the tension of at least a portion of the backing material in response to the

detection of the at least one weft yarn not being substantially parallel to the needle bar.

17. The method of claim 16, further comprising using the respective jack assemblies to increase and decrease the tension of at least one of two spaced and separate edge portions extending along the respective and separate side edge portions of the roll of backing material for aligning the weft yarns of the backing material with respect to the needle bar.

18. The method of claim 13, further comprising mounting the roll of backing material on a pair of spaced jack assemblies positioned at the ends of the roll of backing material, and selectively raising one end of the roll of backing material and lowering the other end of the roll of backing material to increase or decrease, respectively, the tension of at least a portion of the backing material in response to the detection of the at least one weft yarn not being substantially parallel to the needle bar.

19. A method of controlling the bow and skew of a backing material fed through a tufting machine, the tufting machine having a reciprocating needle bar disposed with respect to a tufting zone through which the backing material is fed, a cloth feed roll positioned upstream of the tufting zone, a roll of backing material from which the backing material is supplied, the backing material having a plurality of elongate warp yarns extending longitudinally in the lengthwise direction of the backing material and a plurality of weft yarns extending substantially perpendicular to the warp yarns in the cross-length direction of the backing material, the method comprising:

visually detecting at least one weft yarn marker disposed on the backing material as the backing material is being passed toward the tufting zone, the at least one weft yarn marker being substantially parallel to the weft yarns of the backing material; and

aligning the at least one weft yarn marker with the needle bar so that the at least one weft yarn marker is substantially parallel to the needle bar.

20. The method of claim 19, further comprising manually controlling a bow roll intermediate the cloth feed roll and the roll of backing material, and manually controlling at least one jack assembly constructed and arranged to support the ends of the roll of backing material to align the at least one weft yarn marker with the needle bar.